federal register

MONDAY, JANUARY 31, 1977

PART X

ENVIRONMENTAL PROTECTION AGENCY

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REVISIONS TO EMISSION MONITORING REQUIREMENTS AND TO REFERENCE METHODS

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 669-4]

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Revisions to Emission Monitoring Requirements and to Reference Methods

On October 6, 1975 (40 FR 46250), under sections 111, 114, and 301 of the Clean Air Act, as amended, the Environmental Protection Agency (EPA) promulgated emission monitoring requirements and revisions to the performance testing Reference Methods in 40 CFR Part 60. Since that time, EPA has determined that there is a need for a number of revisions to clarify the requirements. Each of the revisions being made in 40 CFR Part 60 are discussed as follows:

1. *Section 60.13.* Paragraph (c)(3) has been rewritten to clarify that not only new monitoring systems but also upgraded monitoring systems must comply with applicable performance specifications.

Paragraph (e)(1) is revised to provide that data recording is not required more frequently than once every six minutes (rather than the previously required ten seconds) for continuous monitoring systems measuring the opacity of emissions. Since reports of excess emissions are based upon review of six-minute averages, more frequent data recording is not required in order to satisfy these monitoring requirements.

2. *Section 60.45.* Paragraphs (a) through (e) have been reorganized for clarification. In addition, restrictions on use of continuous monitoring systems for measuring oxygen on a wet basis have been removed. Prior to this revision, only dry basis oxygen monitoring equipment was acceptable. Procedures for use of wet basis oxygen monitoring equipment have been approved by EPA and were published in the FEDERAL REGISTER as an alternative procedure (41 FR 44838).

Also deleted from § 60.45 are restrictions on the location of a carbon dioxide (CO_2) continuous monitoring system downstream of wet scrubber flue gas desulfurization equipment. At the time the regulations were promulgated (October 6, 1975), EPA thought that limestone scrubbers were operated under conditions that could cause significant generation or absorption of CO_2 by the scrubbing solution which would cause errors in the monitoring results. EPA investigated this potential problem and concluded that lime or limestone scrubbers under typical conditions of operation do not significantly alter the concentration of CO_2 in the flue gas and would not introduce significant errors into the monitoring results. Lime scrubbers operate at a pH level between 7 and 8 which will maximize SO_2 absorption and minimize CO_2 absorption. Thus, the effect of CO_2 loss on the emission results is expected to be minimal. The exact amount of CO_2 loss, if any, during the scrubber operation has not been determined since it is dependent upon the operating conditions for a particular facility. Although each percent of CO_2 absorption will result in a positive bias of 7.1 percent (at a stack concentration of 14 percent CO_2) in the final emission results, i.e. the indicated results may be higher than actual stack concentrations, the actual bias is expected to be very small since the amount of CO_2 absorption will be much less than one percent.

In flue gases from limestone scrubbers, there exists a possibility of the addition of CO_2 from the scrubbing reaction to the CO_2 from the fuel combustion. Every two molecules of SO_2 reacting with the limestone will produce a molecule of CO_2. Limestone scrubbers are typically operated at an approximate temperature of 50° C under acidic conditions. At these operating conditions the amount of CO_2 generated in a 90 percent efficiency scrubber is 1350 ppm or 0.135 percent CO_2. This will introduce a negative bias of 1 to 1.5 percent for a CO_2 level of 8 to 15 percent. This amount of potential error compares favorably with systems previously approved. Therefore, EPA is removing the restrictions which limited the installation of carbon dioxide continuous monitoring systems to a location upstream of the scrubber.

Several other revisions are being made to paragraphs (a), (b), (c), and (e) of Subpart D which improve the clarity or further define the intent of the regulations. Paragraph (d) has been reserved for later addition of fuel monitoring provisions.

3. *Performance Specification 1.* Paragraph 6.2 has been rewritten to clarify requirements that must be met by continuous opacity monitor manufacturers. Manufacturers must certify that at least one analyzer from each month's production was tested and meets all applicable requirements. If any requirements are not met, the production for the month must be resampled according to military standard 105D (MIL-STD-105D) and retested. Previously the regulation required that each unit of production had to be tested. Copies of MIL-STD-105D may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

4. *Performance Specification 2.* Figure 2-3 of Performance Specification 2 has been corrected to properly define the term "mean differences." The corrections in the operations now conform with the statistical definitions of the specifications.

5. *General.* These amendments provide optional monitoring procedures that may be selected by an owner or operator of a facility affected by the monitoring requirements of 40 CFR Part 60. Certain editorial clarifications are also included. Proposal of these amendments is not necessary because the changes are either interpretative in nature, or represent minor changes in instrumentation testing and data recording, or allow a wider selection of equipment to be used. These changes will have no effect upon the number of emission sources that must be monitored or the quality of the resultant emission data. The changes are consistent with recent determinations of the Administrator with respect to use of alternative continuous monitoring systems.

6. *Effective date.* These revisions become effective March 2, 1977.

(Secs. 111, 114, 301(a), Clean Air Act, as amended, Pub. L. 91-604, 84 Stat. 1678 (42 U.S.C. 1857c-6, 1857c-9, 1857g(a)).)

NOTE.—The Environmental Protection Agency has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A-107.

Dated: January 19, 1977.

JOHN QUARLES,
Acting Administrator.

In 40 CFR Part 60 Subpart A, Subpart D, and Appendix B are amended as follows:

Subpart A—General Provisions

1. Section 60.13 is amended by revising paragraphs (c)(3) and (e)(1) as follows:

§ 60.13 Monitoring requirements.

* * * * * * *

(c) * * *

(3) All continuous monitoring systems referenced by paragraph (c)(2) of this section shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and the new or improved systems shall be demonstrated to comply with applicable performance specifications under paragraph (c)(1) of this section on or before September 11, 1979.

* * * * * * *

(e) * * *

(1) All continuous monitoring systems referenced by paragraphs (c)(1) and (c)(2) of this section for measuring opacity of emissions shall complete a minimum of one cycle of sampling and analyzing for each successive ten-second period and one cycle of data recording for each successive six-minute period.

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Subpart D—Standards of Performance for Fossil Fuel-Fired Steam Generators

2. Section 60.45 is amended by revising paragraphs (a), (b), (c), and (e) and by reserving paragraph (d) as follows:

§ 60.45 Emission and fuel monitoring.

(a) Each owner or operator shall install, calibrate, maintain, and operate continuous monitoring systems for measuring the opacity of emissions, sulfur dioxide emissions, nitrogen oxides emissions, and either oxygen or carbon dioxide except as provided in paragraph (b) of this section.

(b) Certain of the continuous monitoring system requirements under paragraph (a) of this section do not apply to owners or operators under the following conditions:

(1) For a fossil fuel-fired steam generator that burns only gaseous fossil fuel, continuous monitoring systems for measuring the opacity of emissions and sulfur dioxide emissions are not required.

(2) For a fossil fuel-fired steam generator that does not use a flue gas desulfurization device, a continuous monitoring system for measuring sulfur dioxide emissions is not required if the owner or operator monitors sulfur dioxide emissions by fuel sampling and analysis under paragraph (d) of this section.

(3) Notwithstanding § 60.13(b), installation of a continuous monitoring system for nitrogen oxides may be delayed until after the initial performance tests under § 60.8 have been conducted. If the owner or operator demonstrates during the performance test that emissions of nitrogen oxides are less than 70 percent of the applicable standards in § 60.44, a continuous monitoring system for measuring nitrogen oxides emissions is not required. If the initial performance test results show that nitrogen oxide emissions are greater than 70 percent of the applicable standard, the owner or operator shall install a continuous monitoring system for nitrogen oxides within one year after the date of the initial performance tests under § 60.8 and comply with all other applicable monitoring requirements under this part.

(4) If an owner or operator does not install any continuous monitoring systems for sulfur oxides and nitrogen oxides, as provided under paragraphs (b)(1) and (b)(3) or paragraphs (b)(2) and (b)(3) of this section a continuous monitoring system for measuring either oxygen or carbon dioxide is not required.

(c) For performance evaluations under § 60.13(c) and calibration checks under § 60.13(d), the following procedures shall be used:

(1) Reference Methods 6 or 7, as applicable, shall be used for conducting performance evaluations of sulfur dioxide and nitrogen oxides continuous monitoring systems.

(2) Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of Appendix B to this part.

(3) For affected facilities burning fossil fuel(s), the span value for a continuous monitoring system measuring the opacity of emissions shall be 80, 90, or 100 percent and for a continuous monitoring system measuring sulfur oxides or nitrogen oxides the span value shall be determined as follows:

[In parts per million]

Fossil fuel	Span value for sulfur dioxide	Span value for nitrogen oxides
Gas	(1)	500
Liquid	1,000	500
Solid	1,500	500
Combinations	1,000y+1,500z	500(x+y)+1,000z

[1] Not applicable.

where:

x = the fraction of total heat input derived from gaseous fossil fuel, and
y = the fraction of total heat input derived from liquid fossil fuel, and
z = the fraction of total heat input derived from solid fossil fuel.

(4) All span values computed under paragraph (c)(3) of this section for burning combinations of fossil fuels shall be rounded to the nearest 500 ppm.

(5) For a fossil fuel-fired steam generator that simultaneously burns fossil fuel and nonfossil fuel, the span value of all continuous monitoring systems shall be subject to the Administrator's approval.

(d) [Reserved]

(e) For any continuous monitoring system installed under paragraph (a) of this section, the following conversion procedures shall be used to convert the continuous monitoring data into units of the applicable standards (ng/J, lb/million Btu):

(1) When a continuous monitoring system for measuring oxygen is selected, the measurement of the pollutant concentration and oxygen concentration shall each be on a consistent basis (wet or dry). Alternative procedures approved by the Administrator shall be used when measurements are on a wet basis. When measurements are on a dry basis, the following conversion procedure shall be used:

$$E = CF\left[\frac{20.9}{20.9 - \text{percent } O_2}\right]$$

where:

E, C, F, and $\%O_2$ are determined under paragraph (f) of this section.

(2) When a continuous monitoring system for measuring carbon dioxide is selected, the measurement of the pollutant concentration and carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure shall be used:

$$E = CF_c\left[\frac{100}{\text{percent } CO_2}\right]$$

where:

E, C, F_c and $\%CO_2$ are determined under paragraph (f) of this section.

APPENDIX B—PERFORMANCE SPECIFICATIONS

3. Performance Specification 1 is amended by revising paragraph 6.2 as follows:

* * * * *

6. * * *

6.2 Conformance with the requirements of section 6.1 may be demonstrated by the owner or operator of the affected facility by testing each analyzer or by obtaining a certificate of conformance from the instrument manufacturer. The certificate must certify that at least one analyzer from each month's production was tested and satisfactorily met all applicable requirements. The certificate must state that the **first** analyzer randomly sampled met all requirements of paragraph 6 of this specification. If any of the requirements were not met, the certificate must show that the entire month's analyzer production was resampled according to the military standard 105D sampling procedure (MIL–STD–105D) inspection level II; was retested for each of the applicable requirements under paragraph 6 of this specification; and was determined to be acceptable under MIL–STD–105D procedures. The certificate of conformance must show the results of each test performed for the analyzers sampled during the month the analyzer being installed was produced.

* * * * *

4. Performance Specification 2 is amended by revising Figure 2–3 as follows:

Test No.	Date and Time	Reference Method Samples: SO_2 Sample 1 (ppm)	NO Sample 1 (ppm)	NO Sample 2 (ppm)	NO Sample 3 (ppm)	NO_x Sample Average (ppm)	Analyzer 1-Hour Average (ppm)* SO_2	Analyzer 1-Hour Average (ppm)* NO_x	Difference (ppm) SO_2	Difference (ppm) NO_x
1										
2										
3										
4										
5										
6										
7										
8										
9										

Mean reference method test value (SO_2) _____ Mean reference method test value (NO_x) _____ Mean of the differences _____

95% Confidence intervals = ± _____ ppm (SO_2) = ± _____ ppm (NO_x)

Accuracies = $\frac{\text{Mean of the differences} + 95\% \text{ confidence interval}}{\text{Mean reference method value}} \times 100$ = ____% (SO_2) = ____% (NO_x)

* Explain and report method used to determine integrated averages

Figure 2-3. Accuracy Determination (SO_2 and NO_x)

(Secs. 111, 114, 301(a), Clean Air Act, as amended, Pub. L. 91–604, 84 Stat. 1678 (42 U.S.C. 1857c–6, 1857–9, 1857g(a))).

[FR Doc.77-2744 Filed 1-28-77;8:45 am]